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TRANSMITTAL FORM

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Total Number of Pages in This Submission

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Application Number

10/603,263

Filing Date

08/24/2003

First Named Inventor

Mathilde Benveniste

Art Unit

2616

Examiner Name

ANTONY M. SOL

Attorney Docket Number

ENCLOSURES (Check all that apply)

☐

Fee Transmittal Form

☐

Fee Attached

☒

Amendment/Reply

☐

After Final

☐

Affidavits/declaration(s)

☐

Extension of Time Request

☐

Express Abandonment Request

☐

Information Disclosure Statement

☐

Certified Copy of Priority Document(s)

☐

Reply to Missing Parts/Incomplete Application

☐

Reply to Missing Parts under 37 CFR 1.52 or 1.53

☐

Drawing(s)

☐

Licensing-related Papers

☐

Petition

☐

Petition to Convert to a Provisional Application

☐

Power of Attorney, Revocation

☐

Change of Correspondence Address

☐

Terminal Disclaimer

☐

Request for Refund

☐

CD, Number of CD(s)

☐

Landscape Table on CD

☐

After Allowance Communication to TC

☐

Appeal Communication to Board of Appeals and Interferences

☐

Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)

☐

Proprietary Information

☐

Status Letter

☐

Other Enclosure(s) (please identify below):

Remarks

Enclosed please find the reply to the office action on above mentioned patent application. It consists of explanation and amendments. Enclosed is the complete listing of the claims, as amended. The original claims 1-20 were cancelled. They are replaced with 20 new claims.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name

Signature

Printed name

Mathilde Benveniste

Date

6/15/07

Reg. No.

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Mathilde Benveniste

Date

6/15/07

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MATHILDE BENVENISTE

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June 15, 2007

Mail Stop Amendments
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RE: Application No. 10/603,263

Dear Sir or Madam:

This is the response to the Office Action report dated 03/15/2007 concerning the above listed patent application. Enclosed please find the complete listing of the Claims, as amended, with the proper status identifiers and corrected claim numbers. The original claims 1-20 are cancelled. They are replaced by 20 new claims.

The new claims more clearly specify what is new in the patent application. They are supported by the description. I submit that the claims are novel and inventive over the prior for the reasons given below.

The patent application teaches how to solve the "uplink channel capture" problem, which to my knowledge has not been addressed in any of the prior art. In addressing this problem, a new efficient method was needed for coordinating uplink and downlink transmissions, which use the same channel in a system employing directional antennas.

A couple of patents/patent applications were cited in the examiner's report as having anticipated the method in the above listed patent application, referred below as "the invention", either separately or combined. I believe that none of the cited material anticipates the invention.

Mujtaba's patent application [2003/0193925 A1] is the one cited most often in the examiner's report. Both the purpose and method described by Mujtaba are different from those in mine. I propose a novel medium access method. Mujtaba discloses an array of RF resource (code, frequency, or time) division duplexing methods. I do not employ any of the RF resource division duplexing methods discussed in Mujtaba's application. None of the other cited patents, when combined with aspects of Mujtaba's patent application give rise to my method.

Specifically, in my patent application the access point (AP) and all non-AP stations access the channel through a distributed contention-based access protocol that employs contention-based access. In contrast, Mujtaba relies on the assignment of RF resources to users. For instance, in his Claim 4, Mujtaba explains that his method is employed in "the step of assigning a first subset of M orthogonal frequency division multiplexed carriers" and in Claim 5 he talks about "assigning step for each of a plurality of time slots."

In the invention, access times are not pre-assigned. The cited patent by Eastmond (US Patent No. 6,088,337) allows for contention-based access, but contention can occur only among the non-AP stations, referred to by Eastmond as peripheral devices [see col. 28, line 36 – col. 29, line 29]. The access point designates both which time slots to be used by peripheral devices and which by the AP, and for a time slot designated for use by peripheral devices whether it will be accessed through a

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CSMA-like protocol or assigned to a specific peripheral device. Hence, Eastmond's patent, either alone or in conjunction with Mujtaba's patent application, does not anticipate the invention.

The contention-based medium access protocol disclosed in the invention relies on the channel being free of uplink transmissions before the access point can transmit. When used in systems with directional antennas where there is synergy among uplink reservations on different beams, 'uplink channel capture' arises. The method disclosed in the invention remedies the problem. The problem does not arise in the system examined by Serinken, as he does not consider directional antennas. Mujtaba considers the use of directional antennas. In the type system Mujtaba considers, RF resource assignment is used as the medium access protocol, as explained above. When time slots are assigned to uplink and downlink transmission, there is no uplink channel capture. The method proposed in this invention is not equivalent to assignment of channel time along the two different directions. While a common uplink channel release time for all stations is specified, downlink transmission may start prior to the specified time if all uplink transmissions have ended and no station is transmitting.

The medium access protocol of the invention prevents collisions that would occur if a station in one beam transmits while the access point transmits in a different beam. The problem is prevented by disclosing the requirement disclosed in this invention for the AP to occupy all beams while transmitting. None of the cited patents/patent applications disclose this requirement.

The medium access protocol described in the invention relies on time division duplexing – as do most WLANs – but in a novel way. The protocol disclosed in the invention does more than merely separate uplink and downlink transmissions through time division. It also avoids uplink channel capture by coordinating the uplink transmission of several stations in different beams to occur in parallel, and avoids collisions between uplink and downlink transmissions by reserving the channel downlink on all beams at once and terminating such reservations simultaneously. Time division duplexing does not achieve this coordination by itself. Hence, reference to Mujtaba's patent application as anticipating the invention for this reason is not valid.

Both Mujtaba and Eastmond rely on time slotting and assignment of time slots to the uplink and downlink directions. Their methods limit transmission to start at slot boundaries at pre-assigned times on both the uplink and downlink. Serinken's synchronization method [U.S. Patent No. 5,864,544], also cited in the report, causes both the uplink and downlink to start at times signaled from the outside. In this invention, downlink transmission may occur prior to the specified uplink channel release time if uplink transmissions end.

None of the patents cited in the examiner's report anticipate the invention either alone or combined with Mujtaba's patent application, which discloses a method that is different from the invention, as I have explained. More detailed responses to the action report comments for the individual claims are provided in the attached form.

Sincerely,

A handwritten signature in cursive script, appearing to read "Mathilde Benveniste".

Mathilde Benveniste

Enclosures